IN THE CLAIMS

Please **CANCEL** claims 1-90, without prejudice or disclaimer, and before calculating the filing fees for the present application.

Please **ADD** the following NEW claims:

91. (NEW) A repeater comprising:

a first amplifier amplifying an optical signal;

a first dispersion compensator providing dispersion compensation to the amplified optical signal; and

a second amplifier amplifying the optical signal provided with dispersion compensation by the first dispersion compensator.

92. (NEW) A repeater as in claim 91, further comprising:

a second dispersion compensator providing dispersion compensation to the optical signal after being amplified by the first amplifier and before being amplified by the second amplifier.

93. (NEW) A repeater as in claim 92, wherein the first and second dispersion compensators provide different dispersion compensation amounts.

94. (NEW) A repeater as in claim 92, wherein

the first dispersion compensator provides positive dispersion compensation, and

the second dispersion compensator provides negative dispersion

compensation.

95. (NEW) A repeater as in claim 91, wherein the first and second amplifiers are erbium doped optical fiber amplifiers.

96. (NEW) A repeater as in claim 92, wherein the first and second amplifiers are erbium doped fiber amplifiers.

97. (NEW) A repeater as in claim 91, wherein the first dispersion compensator is a dispersion compensation fiber.

98. (NEW) A repeater as in claim 92, wherein the first and second dispersion compensators are dispersion compensation fibers.

99. (NEW) A repeater as in claim 91, wherein the first and second amplifiers have a combined gain so that the optical signal is output from the second amplifier at a power level sufficient to be received by a receiver downstream of the second amplifier.

100. (NEW) A repeater as in claim 92, wherein the first and second amplifiers have a combined gain so that the optical signal is output from the second amplifier at a power level sufficient to be received by a receiver downstream of the second amplifier.

101. (NEW) A repeater as in claim 91, further comprising:

a second dispersion compensator providing dispersion compensation to the optical signal before being amplified by the first amplifier or after being amplified by the second amplifier.

102. (NEW) A repeater as in claim 101, wherein the first and second dispersion compensators provide different dispersion compensation amounts.

103. (NEW) A repeater as in claim 92, further comprising:

a third dispersion compensator providing dispersion compensation to the optical signal after being amplified by the first amplifier and before being amplified by the second amplifier.

104. (NEW) A repeater as in claim 103, wherein the first, second and third dispersion compensators provide different dispersion compensation amounts.

105. (NEW) A repeater comprising:

a plurality of dispersion compensator units optically connected in series, each dispersion compensator unit including

an optical amplifier for amplifying an optical signal, and

a dispersion compensator providing dispersion

compensation to the optical signal either before or after being amplified by the optical amplifier.

106. (NEW) A repeater as in claim 105, wherein the optical amplifier of each dispersion compensator unit is an erbium doped fiber amplifier.

107. (NEW) A repeater as in claim 105, wherein the dispersion compensator of each dispersion compensator unit is a dispersion compensation fiber.

108. (NEW) A repeater comprising:

an optical amplifier amplifying an optical signal; and

first and second dispersion compensators providing dispersion compensation to the optical signal.

109. (NEW) A repeater as in claim 108, wherein the first and second dispersion compensators both provide dispersion compensation to the optical signal before being amplified by the optical amplifier.

110. (NEW) A repeater as in claim 108, wherein the first and second dispersion compensators both provide dispersion compensation to the optical signal after being amplified by the optical

amplifier.

111. (NEW) A repeater as in claim 108, wherein at least one of the group consisting of the first and second dispersion compensators provides dispersion compensation to the optical signal before being amplified by the optical amplifier.

112. (NEW) A repeater as in claim 108, wherein at least one of the group consisting of the first and second dispersion compensators provides dispersion compensation to the optical signal after being amplified by the optical amplifier.

113. (NEW) A repeater as in claim 108, wherein the first and second dispersion compensators provide different dispersion compensation amounts to the optical signal.

114. (NEW) A repeater as in claim 111, wherein the first and second dispersion compensators provide different dispersion compensation amounts to the optical signal.

115. (NEW) A repeater as in claim 112, wherein the first and second dispersion compensators provide different dispersion compensation amounts to the optical signal.

116. (NEW) A repeater as in claim 108, further comprising:

a third dispersion compensator providing dispersion compensation to the optical signal.

117. (NEW) An apparatus comprising:

a first amplifier amplifying an optical signal;

a first dispersion compensator providing dispersion compensation to the amplified optical signal;

a second amplifier amplifying the optical signal provided with dispersion compensation by the first dispersion compensator; and

an enclosure housing the first and second amplifiers and the dispersion compensator.

118. (NEW) An apparatus as in claim 117, further comprising:

a second dispersion compensator providing dispersion compensation to the optical signal after being amplified by the first amplifier and before being amplified by the second amplifier, the second dispersion compensator being housed in the enclosure.

119. (NEW) An apparatus as in claim 118, wherein the first and second dispersion compensators provide different dispersion compensation amounts.

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120. (NEW) An apparatus as in claim 118, wherein

the first dispersion compensator provides positive dispersion compensation, and

the second dispersion compensator provides negative dispersion compensation.

121. (NEW) An apparatus as in claim 117, wherein the first and second amplifiers are erbium doped fiber amplifiers.

122. (NEW) An apparatus as in claim 118, wherein the first and second amplifiers are erbium doped fiber amplifiers.

123. (NEW) An apparatus as in claim 117, wherein the first dispersion compensator is a dispersion compensation fiber.

124. (NEW) An apparatus as in claim 118, wherein the first and second dispersion compensators are dispersion compensation fibers.

125. (NEW) An apparatus as in claim 117, wherein the first and second amplifiers have a combined gain so that the optical signal is output from the second amplifier at a power level sufficient to be received by a receiver downstream of the second amplifier.

126. (NEW) An apparatus as in claim 118, wherein the first and second amplifiers have a combined gain so that the optical signal is output from the second amplifier at a power level sufficient to be received by a receiver downstream of the second amplifier.

127. (NEW) An apparatus as in claim 118, further comprising:

a third dispersion compensator providing dispersion compensation to the optical signal after being amplified by the first amplifier and before being amplified by the second amplifier, the third dispersion compensator being housed in the enclosure.

128. (NEW) An apparatus as in claim 127, wherein the first, second and third dispersion compensators provide different dispersion compensation amounts.

129. (NEW) An apparatus comprising:

a plurality of dispersion compensator units optically connected in series, each dispersion compensator unit including

an optical amplifier for amplifying an optical signal,

a dispersion compensator providing dispersion compensation to the optical signal either before or after being amplified by the optical amplifier, and

an enclosure housing the optical amplifier and the

dispersion compensator.

130. (NEW) An apparatus as in claim 129, wherein the optical amplifier of each dispersion compensator unit is an erbium doped fiber amplifier.

131. (NEW) An apparatus as in claim 129, wherein the dispersion compensator of each dispersion compensator unit is a dispersion compensation fiber.

132. (NEW) An apparatus comprising:

an optical amplifier amplifying an optical signal;

first and second dispersion compensators providing dispersion compensation to the optical signal; and

an enclosure housing the optical amplifier and the first and second dispersion compensators.

133. (NEW) An apparatus as in claim 132, wherein the first and second dispersion compensators both provide dispersion compensation to the optical signal before being amplified by the optical amplifier.

134. (NEW) An apparatus as in claim 132, wherein the first and second dispersion compensators both provide dispersion compensation to the optical signal after being amplified by the optical amplifier.

135. (NEW) An apparatus as in claim 132, wherein at least one of the group consisting of the first and second dispersion compensators provides dispersion compensation to the optical signal before being amplified by the optical amplifier.

136. (NEW) An apparatus as in claim 132, wherein at least one of the group consisting of the first and second dispersion compensators provides dispersion compensation to the optical signal after being amplified by the optical amplifier.

137. (NEW) An apparatus as in claim 132, wherein the first and second dispersion compensators provide different dispersion compensation amounts to the optical signal.

138. (NEW) An apparatus as in claim 135, wherein the first and second dispersion compensators provide different dispersion compensation amounts to the optical signal.

139. (NEW) An apparatus as in claim 136, wherein the first and second dispersion compensators provide different dispersion compensation amounts to the optical signal.

140. (NEW) An apparatus as in claim 132, further comprising:

a third dispersion compensator providing dispersion compensation to the optical signal, the third dispersion compensator being housed in the enclosure.

141. (NEW) An apparatus as in claim 140, wherein at least one of the group consisting of the first, second and third dispersion compensators provides dispersion compensation to the optical signal before being amplified by the optical amplifier.

142. (NEW) An apparatus comprising:

a dispersion compensator providing dispersion compensation to an optical signal;

a first amplifier positioned upstream of the dispersion compensator; and

a second amplifier positioned downstream of the dispersion compensator, wherein a combined gain of the first and second amplifiers is sufficient to compensate a loss in the dispersion compensator and to produce the optical signal having an output power for transmission downstream of the second amplifier.

143. (NEW) An apparatus as in claim 142, wherein the dispersion compensator is a dispersion compensation fiber.

144. (NEW) An apparatus as in claim 142, wherein the first and second amplifiers are erbium doped fiber amplifiers.

145. (NEW) An apparatus as in claim 143, wherein the first and second amplifiers are erbium doped fiber amplifiers.

146. (NEW) An apparatus as in claim 142, further comprising:

an enclosure which houses the dispersion compensator and the second amplifier.

147. (NEW) A repeater comprising:

a first amplifier amplifying a plurality of optical signals, each having a different wavelength;

a first dispersion compensator providing dispersion compensation to the amplified plurality of optical signals; and

a second amplifier amplifying the plurality of optical signals provided with dispersion compensation by the first dispersion compensator.

148. (NEW) A repeater as in claim 147, wherein the first and second amplifiers are erbium doped optical fiber amplifiers.

149. (NEW) A repeater as in claim 147, wherein the first dispersion compensator is a dispersion compensation fiber.

150. (NEW) A repeater as in claim 147, wherein the first and second amplifiers have a combined gain so that the plurality of optical signals are output from the second amplifier at a power level sufficient to be received by a receiver downstream of the second amplifier.

151. (NEW) An apparatus comprising:

a first amplifier amplifying a plurality of optical signals, each having a different wavelength;

a first dispersion compensator providing dispersion compensation to the amplified plurality of optical signals;

a second amplifier amplifying the plurality of optical signals provided with dispersion compensation by the first dispersion compensator; and

an enclosure housing the first and second amplifiers and the dispersion compensator.

152. (NEW) An apparatus as in claim 151, wherein the first and second amplifiers are erbium doped fiber amplifiers.

153. (NEW) An apparatus as in claim 151, wherein the first dispersion compensator is a dispersion compensation fiber.

154. (NEW) An apparatus as in claim 151, wherein the first and second amplifiers have a combined gain so that the plurality of optical signals are output from the second amplifier at a power level sufficient to be received by a receiver downstream of the second amplifier.

155. (NEW) An apparatus as in claim 152, wherein the first and second amplifiers have a combined gain so that the plurality of optical signals are output from the second amplifier at a power level sufficient to be received by a receiver downstream of the second amplifier.

156. (NEW) An apparatus comprising:

a dispersion compensator providing dispersion compensation to a plurality of optical signals, each having a different wavelength;

a first amplifier positioned upstream of the dispersion compensator; and

a second amplifier positioned downstream of the dispersion compensator, wherein a combined gain of the first and second amplifiers is sufficient to compensate a loss in the dispersion compensator and to produce the plurality of optical signals having

an output power for transmission downstream of the second amplifier.

157. (NEW) An apparatus as in claim 156, wherein the dispersion compensator is a dispersion compensation fiber.

158. (NEW) An apparatus as in claim 156, wherein the first and second amplifiers are erbium doped fiber amplifiers.

159. (NEW) An apparatus as in claim 156, further comprising:

an enclosure which houses the dispersion compensator and the second amplifier.

160. (NEW) An optical transmission system comprising:

a multiplexer wavelength-division-multiplexing a plurality of optical signals, each having a different wavelength, into a multiplexed optical signal, and providing the multiplexed optical signal to an optical fiber;

an apparatus, optically coupled to the optical fiber, including

a first amplifier amplifying the multiplexed optical signal provided to the optical fiber by the multiplexer,

a dispersion compensator providing dispersion compensation to the amplified multiplexed optical signal, and

a second amplifier amplifying the multiplexed optical signal provided with dispersion compensation; and

a demultiplexer wavelength-division-demultiplexing the multiplexed optical signal, as amplified by the second amplifier, into respective optical signals.

161. (NEW) An optical transmission system as in claim 160, wherein a combined gain of the first and second amplifiers is sufficient to compensate a loss in the dispersion compensator and to produce the multiplexed optical signal having an output power for transmission downstream of the apparatus.

162. (NEW) An optical transmission system comprising:

an optical transmitter providing an optical signal to an optical fiber;

an apparatus, optically coupled to the optical fiber, including

a first amplifier amplifying the optical signal provided to the optical fiber by the optical transmitter,

a first dispersion compensator providing dispersion compensation to the amplified optical signal, and

a second amplifier amplifying the optical signal provided with dispersion compensation; and

an optical receiver receiving the optical signal amplified by